Protek

Digital Synthesis Arbitrary Function Generator/Counter

Protek 9300 Series

Protek 93120

Protek 9300 Series is a precise test instrument that designed by Direct Digital Synthesis system and can be output standard waveforms (sine,square, triangle, ramp & pulse) and Arbitrary Waveform.
These models used to output function signal and AM, FM, FSK, PSK, Sweep, and Burst, Frequency sweep signal. It is widely used by electronic engineers in electronic laboratory, production lines, education and scientific research.

- Protek 93120 : 120MHz
- Protek 9380 : 80MHz
- Protek 9340 : 40MHz
- Protek 9320 : 20MHz
- Protek 9310 : 10MHz
- Protek 9305 : 5MHz

Features

- Using Direct Digital Synthesis Technology
- 100μHz to 120MHz frequency range for main waveforms
- 1mV output amplitude for small signal
- High resolution of pulse Duty Rate up to 1/1000
- High resolution and accuracy of digital FM
- Continuous phase adjustment function in burst mode
- Arbitrary setting of start and stop for frequency sweep output
- 0.1° resolution of phase adjustment
- Arbitrary setting of AM modulation (1% to 120%)
- 10 Channel signal save, recall setting
- More than 30 kinds of output waveforms (included arbitrary waveform)
- Wide measurement range of frequency counter (1 to 100MHz)
- RS232C Built-in : GUI Software (option)
- GPIB (option)

Accessories

BNC to BNC Cable	1EA
Power Cord	1EA
User's Manual	1EA

Digital Synthesis Arbitrary Function Generator/Counter

Specifications

Frequency Measurement		
Frequency Range		1Hz~100MHz
Min. Input Voltage	ATT Open	50mV (Freq 10Hz~50MHz), 100mV (Freq 1Hz~100MHz)
	ATT Close	0.5V (Freq 10Hz~50MHz), 1V (Freq 1Hz~100MHz)
Max. Input Voltage		100Vpp (Freq≤100kHz), 20Vpp (1Hz~100MHz)
Low pass Filter		Cut off frequency about 100kHz
	With Internal Attenuation	≤-3dB
	With External Attenuation	≥-3dB (Freq>1MHz)
Gate Time		10ms~10s
Operation Characteristics		
Power		220V ±10%, 50~60Hz, Max. 35W
Temperature/Humidity		0℃~40℃, 35%~80%
Dimension		255mm×370mm×100mm

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Function Generator

Subject			9305	9310	9320	9340	9380	93120
Waveform	Frequency Range	Main Waveform	100μHz to 5MHz	100μHz to 10MHz	100μHz to 20MHz	100μHz to 40MHz	100μHz to 80MHz	100μHz to 120MHz
		Stored Waveform	100μHz~100kHz					
	Resolution		1μHz					
	Accuracy		±5×0.000001					
	Stability		±1×0.000001					
Frequency	Main Waveform		Sine, Square, TTL					
	Level Resolution		12Bits					
	Sampling Rate		200MS/s					
	Sine Waveform Distortion Harmonic		-50dBc (Freq≤5MHz), -45dBc (Freq≤10MHz), -40dBc (Freq≤20MHz), -35dBc(Freq≤40MHz)					
	Sine Waveform Distortion		0.1% (20MHz~100kHz)					
	Square Waveform Rising/Falling Time		Less than 25ns		Less than 15ns			
	Stored Waveform	Waveforms	27 Waveforms (Sine, Square, Triangle, Up-lamp, Down-lamp, Noise, Pulse, P-pulse, N-pulse, P-dc, N-dc, Stair,c-pulse, Commut-fu, Commut-hr, Sine-tra, Sine-ver, Sine-pm, Log, Exp, Round-har, sin%, Squ-root, Angent, Cardio, Quake, Combin)					
		Waveform Length	4096Dots					
		Amplitude Resolution	10Bits					
		Duty Factor of Pulse Wave	0.1%~99.9%(Less than 10kHz), 1% ~ 99%(10kHz~100kHz)					
Amplitude	Amplitude Range		2mV ~ 20Vp-p(high impedance), 1mV ~ 10Vp-p(50Ω)					
	Max. Resolution		2μVp-p(high impedance), 1μVp-p(50Ω)					
	Amplitude Accuracy(at 1kHz)		±(1%+0.2mV)					
	Amplitude Stability		±5% / 3hours					
	Flatness	Amplitude ≤ 2V	±3% (Freq≤5MHz), ±10% (5MHz<Freq≤40MHz)					
		Amplitude > 2V	±5%(Freq≤5MHz), ±10% (5MHz<Freq≤20MHz), ±20% (20MHz<Freq≤40MHz)					
	Output Impedance		50Ω					
Offset	Offset Range		±10V(high impedance), ±5V(50Ω)					
	Resolution		2μV(high impedance), 1μV(50Ω)					
	Error		±1%+10mV					
AM	Carrier Waveform		Sine, Square					
	Modulation Mode		INT, EXT					
	Modulation signal	Waveform	Sine, Square, Triangle, Up-lamp, Down-lamp					
		Frequency	10μHz~20kHz					
	Relative Modulation Error		±(5%+0.2)100μHz<Freq≤10kHz, ±(10%+0.5)(10kHz<Freq≤20kHz)					
	Modulation Depth		1%~120%					
	Amplitude of External Input Signal		3Vpp (+1.5V~-1.5V)					
FM	Carrier Waveform		Sine, Square					
	Modulation Mode		INT, EXT					
	Modulation signal	Waveform	Sine, Square, Triangle, Up-lamp, Down-lamp					
		Frequency	100μHz~10kHz					
	Frequency Offset		Max. 50% of carrier frequency for internal FM; Max. 10% of Carrier frequency for external FM; input signal voltage 3Vp-p (+1.5V~-1.5V)					
	FSK Modulation	Input Signal	either Frequency 1 or Frequency 2					
		Control Mode	INT, EXT (TTL level, Low level F1, High level F2)					
		Alternation Rate	0.1ms~800s					
PM	Waveform		Sine, Square					
	PSK Modulation	PSK	Phase 1(P1), Phase 2(P2)					
		Range	0.1° ~360.0°					
		Resolution	0.1°					
		Alternation Time Interval	0.1ms~800s					
		Control Mode	INT, EXT (TTL level, Low level P1, High level P2)					
Burst	Waveform		Sine, Square					
	Burst Counting		1~10000 period					
	Alternation Time Interval		0.1ms~800s					
	Control Mode		INT, EXT					
Sweep	Waveform		Sine, Square					
	Time		1ms~800s(linear), 100ms~800s(log)					
	Mode		Linear, Log					
	External Trigger Signal Frequency		DC~1kHz(linear), DC~10kHz(log)					
	Control Mode		INT, EXT					
Output of Modulation Signal	Waveform		Sine, Square, Triangle, Up-lamp, Down-lamp					
	Frequency		100μHz~20kHz					
	Amplitude		5Vpp ±2%					
	Output Impedance		620Ω					
Storage	Storage Parameter		Single frequency, amplitude, waveform, DC offset values and Function state					
	Storage capacity		10 signal					

Protek
it measures even what you think!

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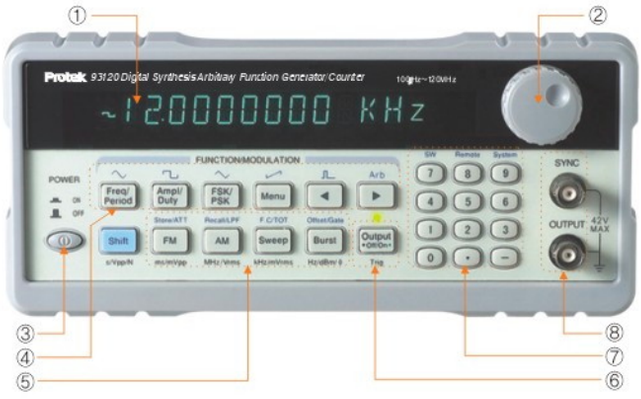
Protek 9300 Series

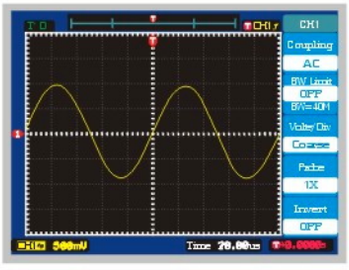
Each Part Names

① Output Display
② Variable Knob
③ Power On/Off S/W
④ Waveforms selective S/W
(Sine, Square, Triangle, Ramp, Pulse)
⑤ Modulation signal selective S/W
(AM, FM, FSK, PSK, Sweep, Burst)
⑥ Output On/Off S/W
⑦ Output value manual input S/W
⑧ Output Terminal



Various Waveforms

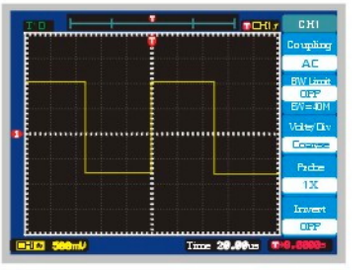
Output Waveform-1 (SINE)



SINE WAVE : 2V, 10KHz

1. Set the sine wave output of 9300
   · Power Voltage : Min 1mV ~ Max 20V
   · Frequency : Min 100μHz ~ Max 120MHz
2. Input the signal on DSO and press the auto key a time
3. Check the output signal of 9300

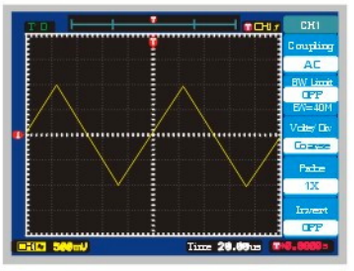
Output Waveform-2 (SQUARE)



SQUARE WAVE : 2V, 10KHz

1. Set the square wave output of 9300
   · Power Voltage : Min 1mV ~ Max 20V
   · Frequency : Min 100μHz ~ Max 120MHz
2. Input the signal on DSO and press the auto key a time
3. Check the output signal of 9300

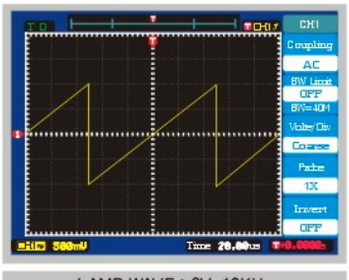
Output Waveform-3 (TRIANGLE)



TRIANGLE WAVE : 2V, 10KHz

1. Set the triangle wave output of 9300
   · Power Voltage : Min 1mV ~ Max 20V
   · Frequency : Min 100μHz ~ Max 100kHz
2. Input the signal on DSO and press the auto key a time
3. Check the output signal of 9300

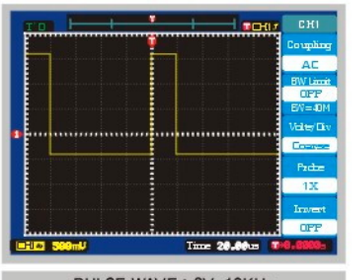
Output Waveform-4 (RAMP)



LAMP WAVE : 2V, 10KHz

1. Set the ramp wave output of 9300
   · Power Voltage : Min 1mV ~ Max 20V
   · Frequency : Min 100μHz ~ Max 100kHz
2. Input the signal on DSO and press the auto key a time
3. Check the output signal of 9300

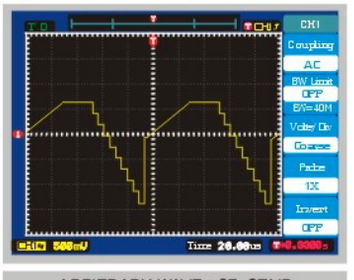
Output Waveform-5 (PULSE)



PULSE WAVE : 2V, 10KHz

1. Set the pulse wave output of 9300
   · Power Voltage : Min 1mV ~ Max 20V
   · Frequency : Min 100μHz ~ Max 100kHz
2. Input the signal on DSO and press the auto key a time
3. Check the output signal of 9300

Output Waveform-6 (ARBITRARY)



ARBITRARY WAVE : 27. STAIR

1. Set the arbitrary wave output of 9300 (1~27)
2. Input the signal on DSO and press the auto key a time
3. Check the output signal of 9300

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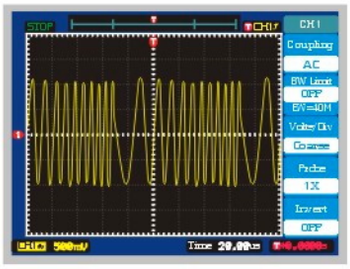
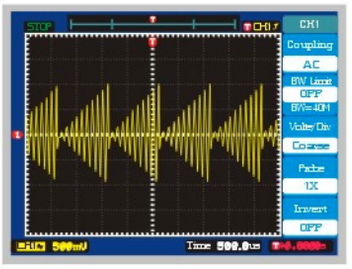
Waveform Modulation-7 (FM)



FM Modulation used by sine WAVE

1. Set the sine wave output of 9300
2. Set the FM modulation function
   (DEVIR, FREQ, WAVE, SOURCE)
3. Check output signal of 9300 through
   DSO display

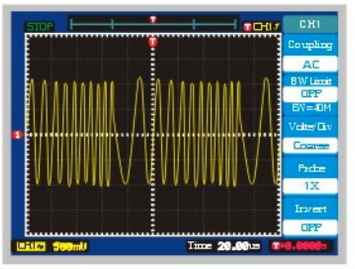
Waveform Modulation-8 (AM)



AM Modulation used by sine WAVE

1. Set the sine wave output of 9300
2. Set the AM modulation function
   (LEVEL, FREQ, WAVE, SOURCE)
3. Check output signal of 9300 through
   DSO display

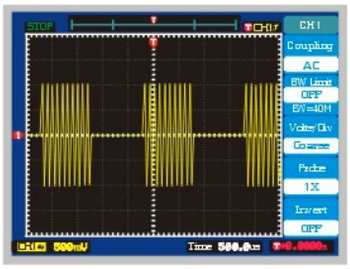
Waveform Modulation-9 (SWEEP)



Sweep Modulation used by sine WAVE

1. Set the sine wave output of 9300
2. Set the sweep modulation function
   (MODE, START-F, STOP-F, TIME, TRIG)
3. Check output signal of 9300 through
   DSO display

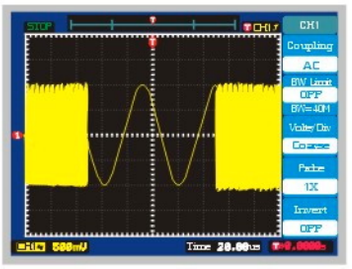
Waveform Modulation



Burst Modulation used by sine WAVE

1. Set the sine wave output of 9300
2. Set the burst modulation function
   (TRIG, COUNT, SPACE-T, PHASE)
3. Check output signal of 9300 through
   DSO display

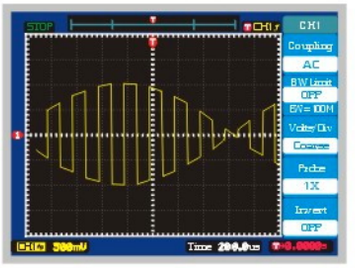
Waveform Modulation-11 (FSK)



FSK Modulation used by sine WAVE

1. Set the sine wave output of 9300
2. Set the FSK modulation function
   (START-F, STOP-F, SPACE-T, TRIG)
3. Check output signal of 9300 through
   DSO display

Waveform Modulation-12 (PSK)



PSK Modulation used by sine WAVE

1. Set the sine wave output of 9300
2. Set the PSK modulation function
   (P1, P2, SPACE-T, TRIG)
3. Check output signal of 9300 through
   DSO display